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POPULAR MECHANICS

An Illustrated Weekly Review of the Mechanical Press of the World

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WHERE SKELETONS OF THE LIVING ARE PHOTOGRAPHED

Interior of an X-Ray Laboratory

FOR FULL DESCRIPTION SEE PAGE 34.

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SMITHSONIAN DEPOSIT.

THE X-RAY A WONDERFUL AID TO SCIENCE.

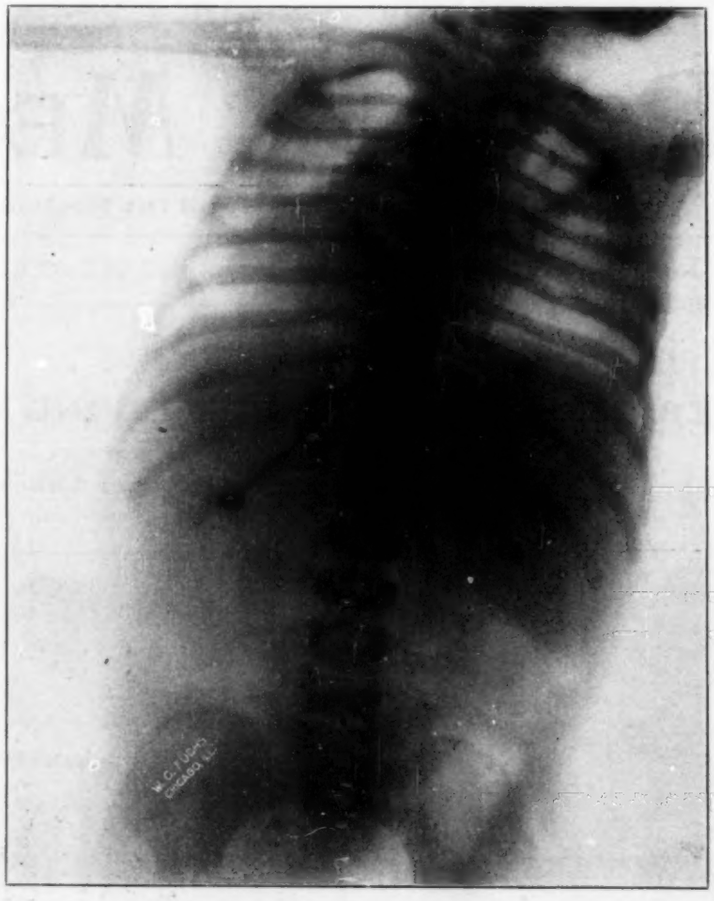
How the Photographs Are Taken—New Method of Illuminating the Body.

The ordinary light that we are accustomed to, makes glass, water and air transparent. But there is another light which does not make glass transparent, but which renders diaphanous every other substance except lead. This is the X-ray. It has been a wonderful revelation to surgical science in that it makes the human body pervious to light, enabling the surgeon to see and locate any foreign substance. We give herewith the picture of a little girl showing a hat pin she had swallowed. She resides in Indiana and her life was saved by means of the X-ray.

It is easier to take the picture of a thin person than a fleshy one with an X-ray machine. To take the picture the negative plate is placed under the patient instead of in the camera. The plate, which in size corresponds to the portion of the body to be photographed, is laid flat on a board and the board rests on a common surgical chair. The person whose interior is to be photographed is laid flat on the negative plate, the board being placed between the plate and the chair cushion to keep the former from breaking. An X-ray tube is then placed over the part of the body to be photographed. From this is extended the leading-in wires, which connect the tube with the static machine, the source of electrical energy. Thus the X-ray light is produced in the X-ray tube and to this light the patient is exposed from one-half to three minutes according to the density of the part of the body to be photographed. After the exposure the negative plate is developed by the ordinary photographic process.

Looking into the interior of a person with the eye, aided by a spy-glass, was made possible by the invention of W. C. Fuchs, manager of the Chicago X-ray laboratory. This is accomplished with the aid of salts, which when taken internally has a peculiar effect on the X-ray, causing it to brightly illuminate the stomach. The salts are by scientists called tongstate of calcium, barium platinum cyanide and uranium. The patient is made to drink a full glass of these salts dissolved in water. An X-ray machine is so placed as to cast its rays on the stomach. This causes the liquid to light up the interior of the stomach. An instrument called a cystoscope, which is a sort of telescope, fitted with a small mirror so that a person can see out at right angles to the end, is then pushed down the patient's throat into his stomach and the physician makes his examination. Formerly the cystoscope was used with a small electric light attached to its end, but the light grew so hot that the patient suffered great torture.

In many of the leading hospitals surgical operations are made with the aid of the X-ray photograph. The patient is sent to the X-ray laboratory, where a photograph is taken locating the source of ailment. The surgeon keeps this photograph in front of him while performing the operation. Before the discovery of the new ray surgeons often cut into wrong portions of the body several times before locating the ailment, and needless death from the knife frequently resulted.



X-RAY PHOTOGRAPH OF 6-INCH HAT PIN IN STOMACH.

CAN MAKE MUMMIES.

A fluid which it is claimed petrifies the body and keeps it in a state of preservation far surpassing the mummies of ancient Egypt, is said to have been discovered by Charles B. Lewis, of Memphis, Tenn. Mr. Lewis declares that the fluid converts the body into a solid rock and makes it proof against the ravages of time. No swathings and bandages such as were used in the days of old Rameses are required.

THIS HAND SAW COST $1,500.

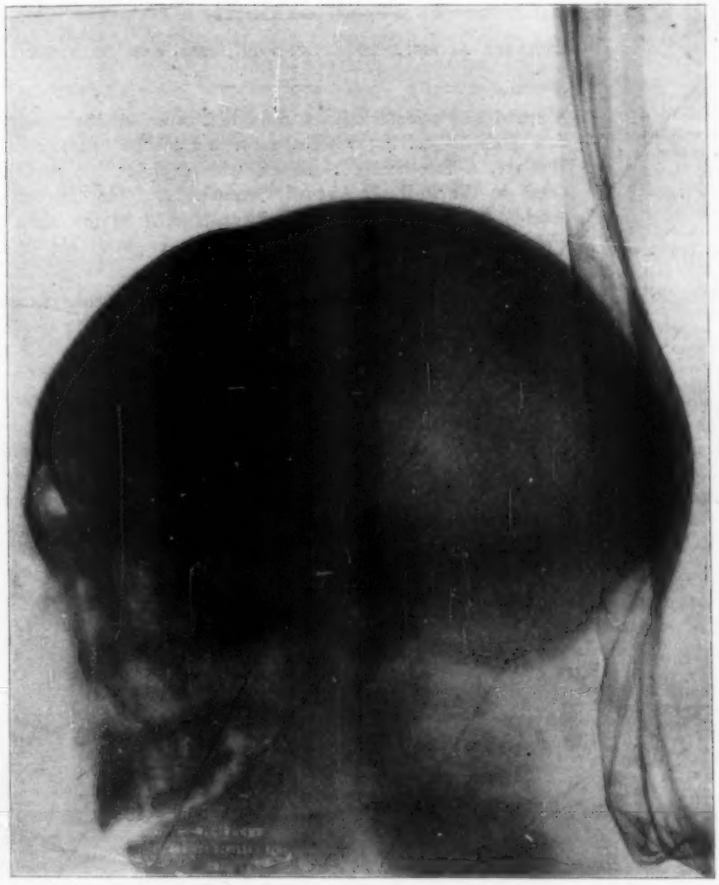
The schooner William H. Bailey was libeled for damages inflicted on a European cable of the Commercial Cable company in New York harbor. The vessel's anchor fouled on the cable and instead of freeing it in the usual way, which would have required less than five minutes, more than an hour was sepnt in sawing apart the cable with a meat saw. The use of the meat saw points to the cook as the culprit. As the vessel was mulcted in the substantial damages of $1,500, one can see that the ill-starred sea cook's reputation is not undeserved.

TO MAKE GILT MOULDINGS.

(Requested by C. L., South Bend.)

How gilt mouldings are made: The timber (pine is preferred) is run through the whitening machine, which coats it with white enamel. This forms a body for the leaf or other gilding material, which is applied when the enamel is dry.

For an ornamental moulding the process is the same until after the whitening is applied. The ornamenting is usually made of glue, rosin and whitening and is put on the enamel before the gilding. It may be run on "direct" by machine or placed on by hand. "Direct" ornament moulding is put through a machine placed in contact with a brass roller on which a reverse of the ornament required has been engraved. Into this machine the composition is fed while hot.



X-RAY PHOTO OF BULLET IN HEAD.

RED IS DANGER EVERYWHERE.

Even in the far-away Society Islands, red is used as a danger signal. It is made from burning a dried sea weed which gives forth a bright cherry red, somewhat like Bengal's fire. The moment any immergency arises a heap of the weed is set on fire and every native in sight of the signal is in duty bound to rush to the rescue.

CATCH FISH BY USE OF ELECTRIC LIGHT.

W. E. Cole, of Norfolk, Va., has just completed a vessel especially designed for catching fish by the use of an electric light. Fish are attracted by the light, it is claimed, and can be scooped up in mammoth quantities. The General Electric company has constructed an arc light of high power, which is carried over the bow of the vessel. The fish which congregate under the light are caught in nets attached to the vessel.

"Here's a good one," said the man from Denver. "What's the difference between a pen and a pencil? Give it up? A pen has to be driven, but a pencil has to be lead. See?"

FLOATING LAUNDRIES ON THE LAKES.

Laundries replete with every equipment and convenience are to ply the waters of the great lakes. They are being built by the Empire Laundry Machinery Co., of Boston, for the Great Northern Steamship company. The vessels are now being built in New London, Conn., and are the first merchant vessels ever equipped with plants of this kind, says the National Laundry Journal. Each ship is equipped with two large metallic and brass washing machines, extractors, mangles, starch kettles, Tyler ironers, electric irons, soap tanks, truck tubs, wash tray sets, ironing boards, starching and ironing tables, and large dry rooms.

Prof. Small of Columbia university, says that it is not necessary to wait for more developments before equipping every lighthouse with apparatus for sending wireless messages to sea as a means of notifying ships of their proximity to rocks and breakers.

No matter how you toil and strive
To make this thankless world your debtor,
Some man who never tried at all
Will vow he could have done it better.
—Washington Star.

DADDY ASKS FOR HIS BOY.

I wisht 'at I c'd see th' little chap, jes' once ag'in,
Wisht I c'd look out at th' gate an' see him comin' in.
Wisht I c'd hear him say: "Hey, dad, what kind o' bugs is these?
Found 'em down t' th' river in th' holler o' th' trees?"
I wisht he'd clamber up an' wipe his muddy feet on me,
I wouldn't care at all for that, if I c'd only see
His face for jes' a minute, like a lightnin' flash in rain,
Th' rain o' my hot tears, an' then I'd let him go again.

Sometimes I think I hear his feet, a-patterin' in th' hall,
Ag'in I'm almost certain I can hear his childish call
In glee at some new treasure, some new kind o' worm he's found,
I got up sort o' quiet an' I jes' peer all around.
Thinkin' mebbe I'd been dreamin'—that he wasn't dead at all.
Pore ol' daddy, broken-hearted; but th' evenin' shadows fall,
Th' daylight fades an' flickers, an' I can't keep back th' moan,
For I know my boy has gone, an' me, his daddy, lef' alone.

Lord, I wisht ye'd le' me see him, jes' a minute, Lord, that's all,
In th' dream or in th' daylight, I don' keer—jes' hear him call;
Le' me think I'm listenin' to him, in th' firelight's rosy gleam,
Out o' all ye'r wealth o' treasures ye can surely spare a dream.
Lord, ye got so many children, ye won't miss him for a while,
If ye let him come on angel's wings, t' speak, t' soothe, t' smile,
Won't ye let him come an' whisper, "Daddy, here's yer boy"—an' then,
After jes' that little visit, ye can call him back again.

—American Thresherman.

BEATS RECORD OF LIQUID AIR.

Petroleum Ether Discovered that Will Not Freeze at 205 Below Zero.

A liquid that will not freeze at a temperature of 205 degrees below zero is said to have been discovered by Dr. Arsene d'Arsonval, of the French Academy of Sciences. The liquid is extracted from ordinary petroleum. Its record of unfreezability beats that hitherto held by liquid air. The inventor says the "petroleum ether" is destined to be of the greatest importance to scientists, especially in chemical research, permitting the construction of thermometers of a precision not yet attained.

VEILED SARCASM.

"Have you chosen the text for your first sermon?" asked Miss Quizem of the embryo minister.

"I have," answered the e. m. "It is Revelation 12:1—'And there appeared a great wonder in heaven; a woman——.'" —Chicago News.

Features of Next Week's Issue

What will they do next? A man in Europe has invented a real talking machine--not a phonograph--but a machine that utters vowel sounds without their having been spoken before.

A machine that works algebra problems has been perfected by a Spaniard. Read about them in next week's Popular Mechanics.

Would you like to make your own experiments in electricity? That's the way Edison, Marconi, Blake and Roentgen began. Read Popular Mechanics and you will learn how.

In Wisconsin there is a summer school for artisans--the only one in the world. Read about it next week.

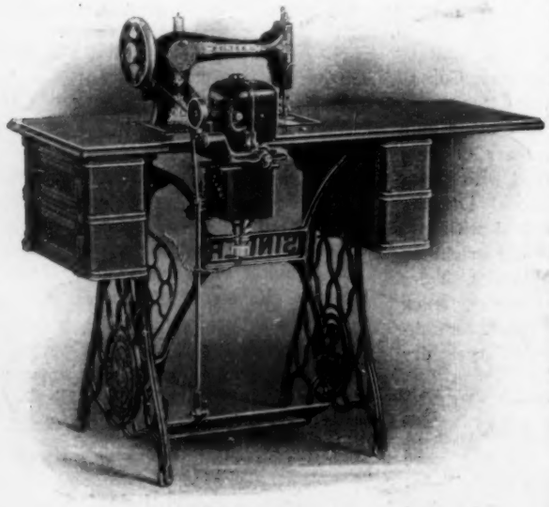
The next issue of Popular Mechanics will also tell about a locomotive that runs by compressed air; the oldest fire engine in Illinois; the moving of the great statue of Vercingetorix on an automobile from the Sculptor's shop; how to build small telephone exchanges and make them pay and numerous other things of interest to people who want to learn and the mechanical world in general.

BIG FISH IN A WATER TANK.

When the tender of an engine on the Louisville & Nashville had been filled at Queen's Lake, Ill., a few days ago, a great splashing was heard in the water tank. Looking down the engine crew saw a large buffalo fish struggling on the nearly dry bottom. After a lively scuffle the fish was captured. It weighed 25 pounds. As the pipe used for pumping purposes is only 4 in. in diameter, there was considerable guessing as to how the fish got into the tank. The final conclusion was that it entered through the pipe when a minnow and grew to be a twenty-five-pounder.

SEWING MACHINE MOTOR.

An electric motor for running a sewing machine is illustrated below. The motor is attached to the table and a starting rod connects with the treadle, allowing the machine to be controlled by the feet of the operator. Various speeds are secured according to the position of the foot treadle. The motor and attaching device are made by the Diehl Mfg. Co., Elizabethport, N. J. Where a residence is not wired for electric light, power can be had from a storage battery.



SEWING MACHINE MOTOR.

An all night shoe store, recently established in Herald square, New York, is the latest departure in the shoe trade.

FLAT SPOTS ON DRIVING WHEELS.

ENGINEER ASCRIBES THE CAUSE TO SPEED AND COUNTERBALANCE.

Speed and counterbalance combined cause all the troubles of flat spots on driving wheels, according to the belief of I. F. Wallace, a locomotive engineer, who explains his theories in detail in the Railway Age of December 27. He suggests as a remedy a heavier rimmed wheel constructed on the same principle as the fly-wheel of the stationary engine. Mr. Wallace says:

"Twenty-five years ago the speed of freight trains was from 12 to 20 miles an hour; of passenger trains from 20 to 30, and just as soon as the railways commenced to increase the speed of their trains these flat spots commenced to develop on the same engines that were pulling the trains before, and the greater the speed the quicker the flat spots would develop, everything else being equal. No up-to-date mechanical engineer would think of designing a high speed stationary engine with a counterweight opposite the crank-shaft and expect a smooth running engine. He would simply put on a fly-wheel and the heavier the rim the smoother the engine would run. This same principle applies to locomotive practice to-day. In Fig. 1 you will note a modern driving wheel with the pin on the lower quarter and the center of counterbalance on the top quarter. Imagine this is the right main wheel on a locomotive going at the rate of 60 miles per hour, the weight and angularity of the

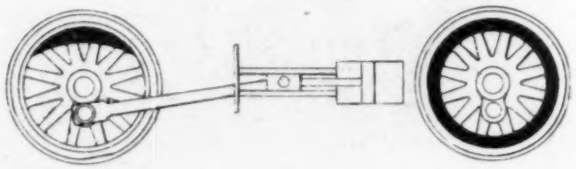


FIG. 1 FIG. 2.

main rod on the downward thrust, the steam exerting its greatest power on the piston and the counterbalance coming over at the same time. What is the result? A hammer blow and slip. As I look at it, it cannot be otherwise. At such a high rate of speed the centrifugal force of the wheels throws the engine out of balance by having counterbalance in the wheel opposite the pin.

"My idea of a remedy is explained in Fig. 2. Take out the counterbalance or place in the outside rim of the wheel center all that is possible—the more the better. Follow out stationary practice as far as possible, and I believe it will save thousands of dollars to railways annually."

NEW ELECTRIC FREIGHT LINE IN THE COAL REGIONS OF ILLINOIS.

Freight traffic is to be the principal source of revenue of the Coal Belt Electric Railway, now in course of construction in southern Illinois. It is to extend from Johnson City around by Spillertown, Marion, Carterville, Herin and back to Johnson City forming a loop. Seventeen miles—from Spillertown to Herin—have already been built.

The company proposes an extension of 10 miles, from Carterville to Carbondale, to meet a 70 miles extension of the St. Louis & Illinois Suburban Electric Line. The latter road does an extensive freight business between East St. Louis and Belleville. The company owns two coal mines, the machinery of which is operated by the electric current from the trolley wire. Four 50-ton locomotives are now in use. Each is equipped with four G. E. 160-horsepower motors. The road operates 400 coal cars of 80,000 pounds capacity. Twelve loaded coal cars constitute an average train for one locomotive. Six hundred new cars are to be put in service without delay.

BURGLAR CHLOROFORMED.

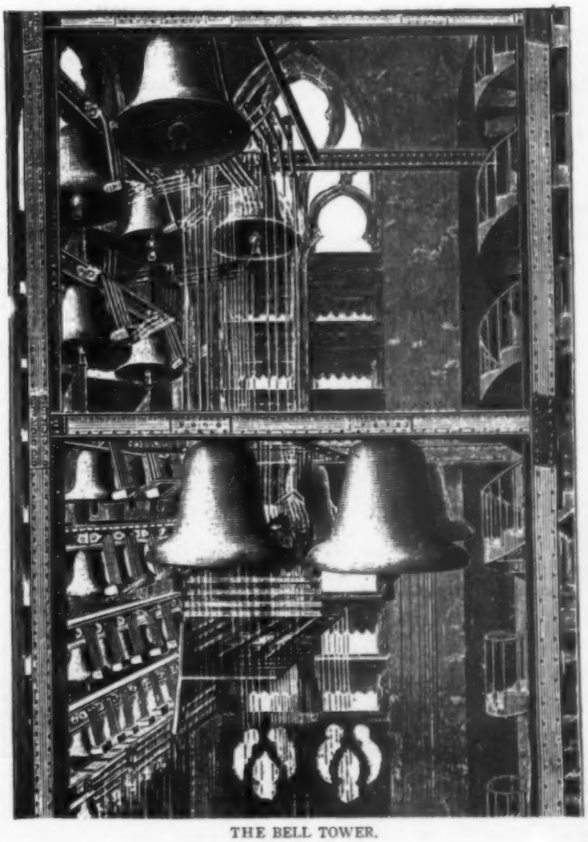
The story comes from Connecticut, says the Journal of the American Medical Association, that a promient dentist of the state got his start in the following manner: Returning to his office one evening for a book he found there a rough looking fellow with a bag in his hand. The dentist immediately insisted upon his taking a seat in the chair, giving the burglar to suppose that he thought his call was for professional services, and before the amazed malefactor could make up his mind to fight or run the dentist had him chloroformed, gagged, bound and in the police station. When the story came out people thought that a man with such nerve must be competent in his profession, so a lucrative practice followed.

THE CHIMES OF ST. GERMAIN L'AUXERROIS.

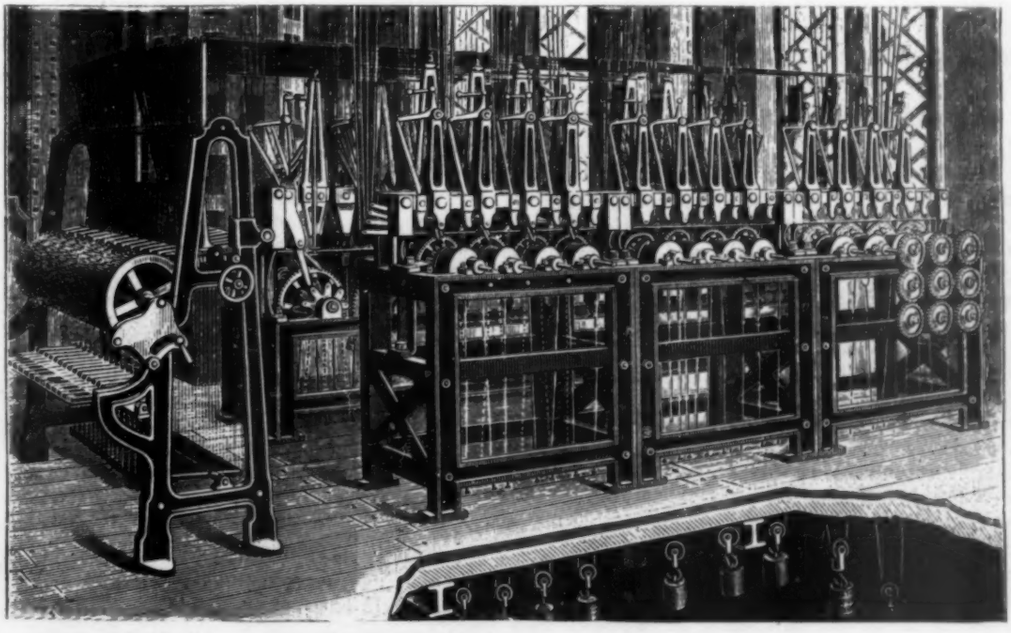
As a result of the recent return to popular favor of church chimes the city of Paris has just spent 5,000 francs in the restoration to musical power of the chimes of Saint Germain-l'Auxerrois. This set of bells took fifteen years to construct and place in position, the whole installation costing in the neighborhood of 200,000 francs, exclusive of the tower which contains it. This is a high price for sound. It was completed in 1878, but had scarcely been played upon a year when the set was abandoned and for 20 years remained dumb.

Now it is restored to its pristine glory. It is the first set of chimes to be operated entirely by mechanism. The whole system occupies 200 cubic meters of space. The largest bell, giving the note C, weighs 2,000 kilograms. There are 38 bells in all. Each note is furnished with four clappers and with an individual movement. The biggest bell is used for sounding the hours.

A steel cylinder covered all over with spikes, after the order of the well-known musical-box, operates the chimes. These spikes, in turning, release levers directly connected with the clappers of the various notes. As there are four clappers to each bell, one may be employed in striking the note, two more are getting ready for use and the fourth is at rest. So accurate is this adjustment that the same note may be played five times in one second. The airs may be changed at will by unscrewing the spikes from their places on the surface of the cylinder and placing them to suit the exigencies of another piece. The cylinder is pierced for this purpose with 29,184 holes. A keyboard similar to that of a piano is also provided, enabling the chimes to be played by hand. There is a ready response to the touch of the operator, though the pressure is required to be a trifle heavier than for the piano keyboard. Illustrations from La Nature, Paris.



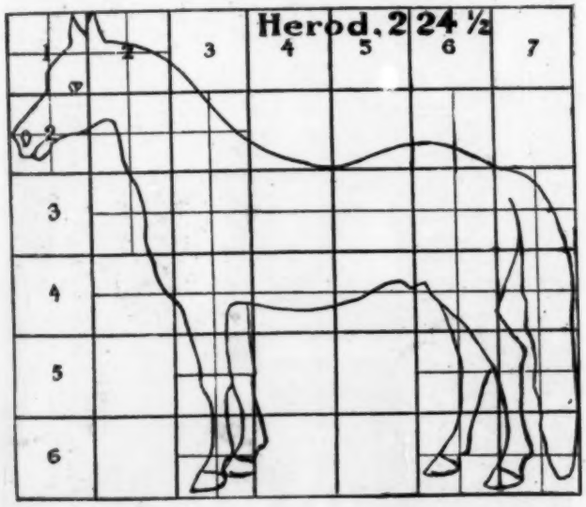
THE BELL TOWER.



THE AUTOMATIC PLAYER AND KEYBOARD.

TO DRAW A PATTERN OF A HORSE.

How to draw a pattern of horse.—For one of little experience in drawing I would resort to the process known as blocking, says Bunyan E. Anderson in the American Artisan. First obtain a profile picture of the object desired. Second, decide upon either the length or width of pattern. Divide this into any convenient number of parts (the more parts the easier the drawing); 42 inches can be easily divided into seven equal parts (6 inches each). Next divide the length of the picture into as



many corresponding equal parts. Then mark off the picture into squares corresponding to these parts in size. Subdivide any squares having irregular short crooked lines of outline of object. Next divide pattern into same number of squares as picture, transferring subdivided squares to corresponding square of pattern. Then fill in outline of object, only one square at the time, noting carefully where line of object crosses line of square. Be careful to mark in right square, corresponding to picture. With a little patience any school boy can draw the pattern.

GREAT DANGER OF "SMOKE EXPLOSIONS."

Interesting Demonstration in Philadelphia with Aid of Miniature House.

"The Explosion of Smoke" was the subject of a recent talk made by William McDevitt, inspector of the Fire Underwriters' Association of Philadelphia. By the aid of a miniature house he gave an illustration of the dangerous nature of smoke when confined in a burning building. The house was filled with smoke which was soon converted into a gaseous substance, and then it exploded with a loud report.

"Burning buildings," said Inspector McDevitt, "can be made and are often converted into gas retorts by the confinement of gases given off from the products of either the burning contents or the material of the building itself. When smoke is confined and kept heated and then mixed with a certain amount of atmospheric air, a highly inflammable and explosive mixture is formed, producing a gaseous flame of a temperature exceeding that given off at the point where the fire is burning."

He advocated as the best remedy a system of sprinklers, says the Fireman's Herald, which begin to operate at a certain temperature, dampening the air and thus killing the explosive effect by changing the proportion of gases necessary to cause explosion.

We want some one in every shop and factory to canvass for "Popular Mechanics." Write for terms.

BURN GREAT PILES OF LAUNDRY.

Careless Public Loses Thousands of Dollars Monthly in Uncalled-for Linen.

Thousands of dollars worth of laundried shirts, collars and cuffs, that have not been called for, are burned or otherwise disposed of by the laundry establishments of large cities every month.

To successfully put them on the market, says the National Laundry Journal, the collars would have to be assorted in sizes and styles, and this would be impracticable as they would be sold at a price that would not justify the trouble. In consequence they are taken out and burned and in a short time the shelves are again filled with unclaimed packages. The value of these packages usually range from 30 cents to $5. In Birmingham, Ala., $3,500 worth of collars and cuffs are destroyed every year. At this rate the enormous sum of $231,000 is represented in similar linen that is burned in Chicago each year and nearly twice that amount in New York.

The remarkable number of collars and cuffs left at laundries can be accounted for in several ways. Frequently strangers come to the city, send their soiled clothes to the laundry and hastily leave without calling for them. They rarely ever go to the trouble of sending back for them and the package is consequently burned. Another reason is gross carelessness. Men often start down town with a bundle of soiled clothes and leave them at the first laundry they happen to see. They forget where they left them and some poor laundryman is frequently the victim of abuse from some irate citizen who had never before been in his establishment."

SAW A LOCOMOTIVE BLOW UP.

"I am one of the very few persons who ever saw a locomotive blow up," remarked an old railroad man to a reporter of the Baltimore Sun the other day. "Generally the men who witness the explosion of a steam engine are so dead when the smoke has cleared away that they are never able to give an account of the disaster.

"Like many other accidents, the one I saw was the result of carelessness—low water in the boiler, for the engine had just come from the shops and was in complete repair. It was on the Baltimore and Ohio Railroad in West Virginia a number of years ago. I was on a locomotive some distance behind the one which exploded, and was looking ahead out of the cab window, so that the ill-fated engine was immediately before my eyes. Suddenly I saw the machine rise in the air; it seemed to me to be about as high as the telegraph poles beside the track, which, as you doubtless know, are not so high as telegraph poles in the city. Then came a cloud of dense black smoke and dust, which hid the engine from view, and almost simultaneously I heard the roar of the explosion.

"Both the engineer and the fireman were killed, and the locomotive was fit for nothing much but the scrap heap when it fell to the ground. The crown sheet over the fire box had blown out.

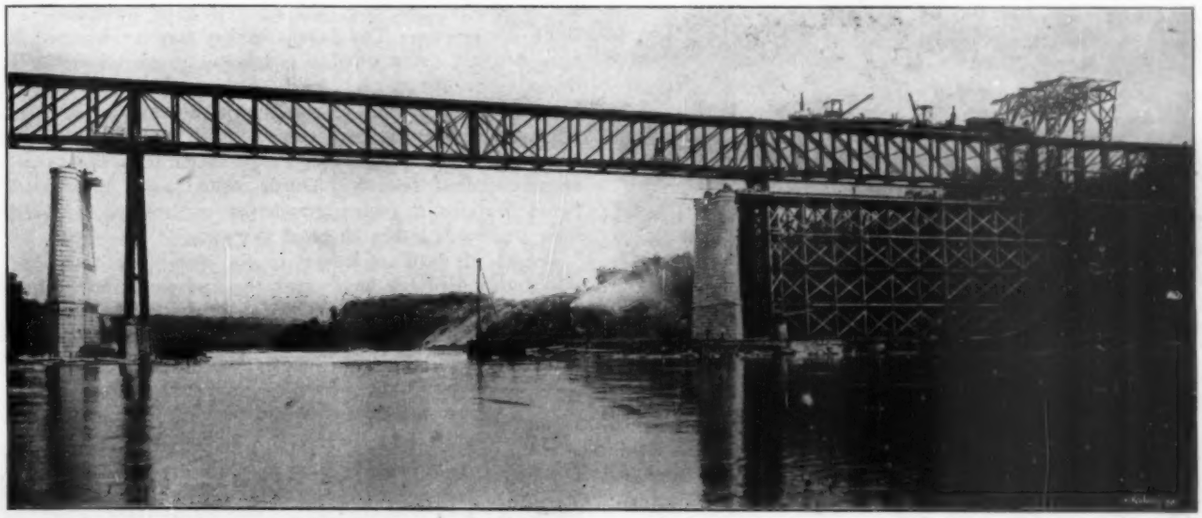
"The strange thing about the explosion was that no white steam was seen. You know that perfectly dry steam is invisible, being like the air, and before it had time to condense it was probably smothered by the cloud of smoke and dust raised by the bursting of the boiler."

Large quantities of platinum, not recognized by the miners, has been thrown away by Yukon gold miners. The dominion government metallurgist at Vancouver says that among the millions of dollars worth of gold brought to him during the season was an abundance of the platinum unknown to the miners. It is believed that hundreds of thousands of dollars worth of the metal has been thrown away in this manner.

REMARKABLE WORK OF REPLACEMENT.

Progress and Plans of the St. Paul's New Bridge at Minneapolis.

One of the most important pieces of replacement work undertaken in the last few years, says The Railway Age, is that of the Chicago, Milwaukee & St. Paul bridge over the Mississippi at



Minneapolis, Minn. The new bridge will be a modern double-track structure. It was made necessary because of the increased weight of traffic and the company's plans to have its lines made double-track all the way between Chicago and Minneapolis. They are already double-tracked from Chicago to the Mississippi river at Savannah, Ill.

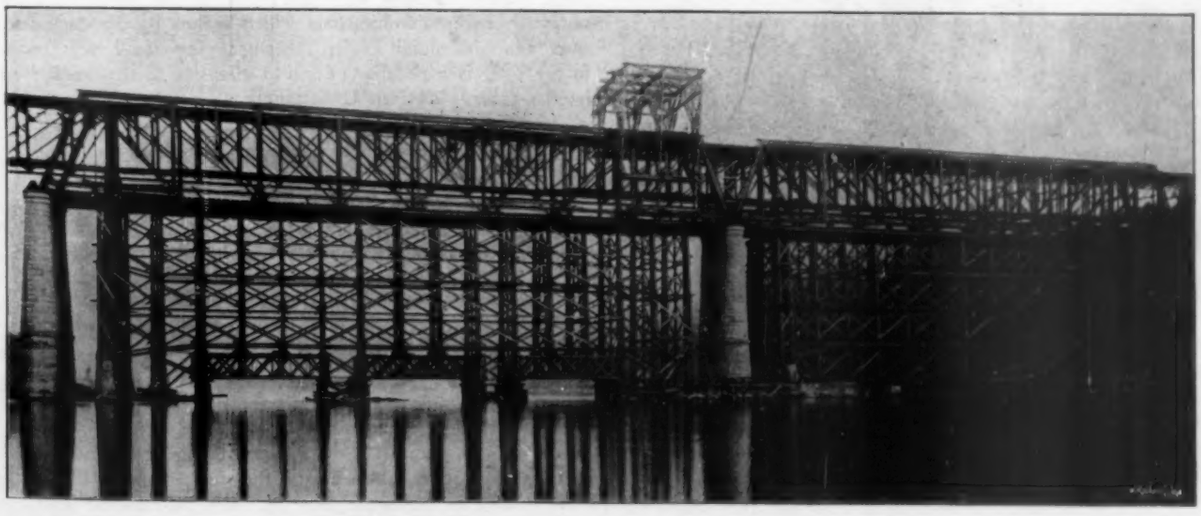
The new bridge consists of three river spans and four bearings at one end of the span; whole instead of segmental rollers being used. When completed the bridge will be 1,060 feet long, weighing approximately 3,200 tons. It is designed to carry on the double tracks two 177.5-ton engines followed by a uniform weight of 5,000 pounds per linear foot of track. The struss spans have all been completed and work is fastly progressing on the approaches. It is expected that the structure will be ready for service early in the spring.

LIGHT FROM STOCK YARDS SMELL.

Chicago Professor Says It Could Be Made to Illuminate the City.

Working along the same lines as Prof. Frederick P. Gorham, of Brown University, who has been producing light from old beefsteaks and pork chops, Prof. Frank Yount, of Chicago, proposes to light Chicago from the odors from the stock yards district. Prof. Gorham found in a piece of over-ripe meat a source of illumination with the minimum degree of heat. The meat, he said, contained organism which, when fed on common salt, nitrogen and another substance, which he refuses to make known, yielded light from oxidation. Thus he produced an illuminant sufficient to light his house, and he declared it is good as magnesium powder for taking photographs.

Prof. Yount contends that these same organisms are contained in the odor that emits from the stock yards, and that by the proper process the animal phosphorescence could be made to illuminate Chicago from one end to the other and that there would be but little further use of gas and electric plants.



BRIDGE FULLY TRUSSED FOR REPLACEMENT.

If you like "Popular Mechanics," show it to your friends.

MEXICO'S EXCELLENT COFFEE AND TOBACCO.

Cigars Equal to Finest Havana—Mocha Coffee Is No Better.

Mexican coffee and tobacco is destined to take first rank for quality in the markets of the world, according to the opinions of many experts.

THE HORSELESS CARRIAGE—ANOTHER OPPORTUNITY FOR CAPITAL.

"In certain districts the tobacco leaves are fine and silky," says Dixie, "and even more aromatic than those of the famous Buelta Abajo in Cuba. Indeed, its crops show that Mexico can produce tobacco equal to the finest grown in any part of the world. The managers of the Paris exposition of 1889 were of this opinion and classified Mexican tobacco as fully equal, if not superior, to the best Havana product, and awarded it gold, silver and bronze medals."

Dixie, the brightest and handsomest of Southern journals of its class, is published in Atlanta, Ga. It contains an interesting account of Mexican resources in its Christmas issue. Regarding coffee it states:

MAGUEY PLANT, FROM WHICH PULQUE IS EXTRACTED.

"Excepting only Brazil, Mexico has coffee lands enough if cultivated to supply all the markets of the world. While the coffee grown in Colina and Uruapam is classed with Mocha, all Mexican coffee is of excellent quality and carries a surpassing flavor and aroma."

Paris is the center of an international telephone wire net, its extreme ends are London, Hamburg, Berlin, and (in connection with the French-Italian line about to be opened) Turin and Milan. The Paris Hamburg line is about the same. The distance from Paris to Turin, measured by an air line, is about 375 miles, and that between Paris and Milan 470 miles.

SIGNS AND MODES OF DEATH.

The coldness of the feet; the picking at the bed clothes and playing with flowers; the hands feel clamy; the voice grows weak and is difficult; husky or piping; the eyes begin to hold an assumed position; the heart the central organ of circulation, comes to a full stop, and this stop means forever in this world. When one is summoned to inspect a body supposed to be dead, he has no easy task before him. There are three modes of death, speaking from a physiological standpoint: First, death by syncope: The heart's action may be arrested either by a deficient nerve supply, or deficient supply of blood, or by defective quality of the blood. Second, death by como: The brain centers are usually those first incapacitated. In apoplexy we have an example of a natural death by como. The blood escaping from the ruptured vessels compresses the brain and unconsciousness follows. Third, asphyxia is that condition found in cases strangled, smothered or drowned or die from some poisonous gases, charcoal gas, etc.

Results of death: Changes in the skin. As soon as the vital function of life has ceased, the surface of the entire body becomes of an ashen hue. This is due partly to the settling of blood in the deeper parts, and also by the putrefactive changes

COFFEE YARD NEAR JALAPA, MEXICO.

occurring in cellular parts of the skin. Rigor mortis takes place soon after death; commonly known as stiffening of the body. Then changes will take place in the body. You will notice greenish discolorations which makes its first appearance over the abdominal cavity, accompanying these putrefactions in the body is a peculiar odor and offensive to the smell caused by the gases.—Western Undertaker.

HOW TO AVOID "SWEATY" PIPES.

"The cause of so-called sweaty pipes is very simple and the remedy equally simple. Perhaps it is hardly necessary to explain that the pipes are not sweaty in the sense that the moisture comes through the pores from the inside, though this is a not uncommon belief among those who do not understand the cause. The moisture on the pipe is, of course, caused by the condensation of the moisture in the air, the difference in temperature between the air and the pipe causing the condensation of the natural moisture in the air and depositing it on the pipes. The difference in temperature between the air and the pipe is caused by the water flowing through the pipes. Water at rest in the pipes soon takes nearly the same temperature as the room. Even an occasional flow of water through the pipes will not cool them sufficiently to make them sweat, but even a slight constant dropping will cause the trouble. That being the case, it is only necessary to make tight all faucets and cocks on supply and flush pipes in order to put a stop to the trouble. Packing the pipes will of course help matters, but this is expensive and unnecessary."—Domestic Engineering.

MACHINE TO SHARPEN TWIST DRILLS.

Small Emery Wheel and Sewing Machine Frame About All That Is Needed.

To rig up a machine to sharpen twist drills, a small emery wheel is second to none, says the Model Engineer and Amateur Electrician. An old sewing machine stand with treadle and driving wheel, two pieces of 1 in. and ¼ in. bar iron, a few bolts, nuts and washers, and a shaft of iron or soft steel is about all that is necessary except the emery wheel. The stand can be bought in nearly any second-hand store or "junkyard" for a trifle. There is generally a square hole in the top of these stands and the hole, of course, must be closed up by fastening a piece of board in it fitting snug all round. Next it will be necessary to get two pieces of bar iron, each about 8½ ins., long, 1 in. wide and ¼ in. thick. These are marked A and AA on Fig 1. Bend these at right-angles 2 ins. from one end by heating red hot, so they will not break. Now drill in the short bend two ¼ in. holes for two ¼ in. bolts. In the long ends drill a hole ½ in. from the end and have them tapped with thread to fit the ⅜ in. by 2 in. bolts. Taper the ends of these bolts to a cone point by filing or turning, and make them as smooth as possible, but do not make them too stubby. One of these bolts can be fastened permanently in AA with a lock nut, as shown, letting the point protrude through AA, say ⅝ in. The other bolt, B, ought to be made so that it can be adjusted as the case may require. Instead of having it permanently locked, get a small wheel off an old steam valve (C) or an iron disc ¼ in. about 3 ins. diameter. This must be tapped to file thread on the bolt. It will be necessary before final fitting up to see that the cone points are of equal height, and, if not, a thin piece of cardboard will have to be put under the lower of the two standards A or AA when bolting them down.

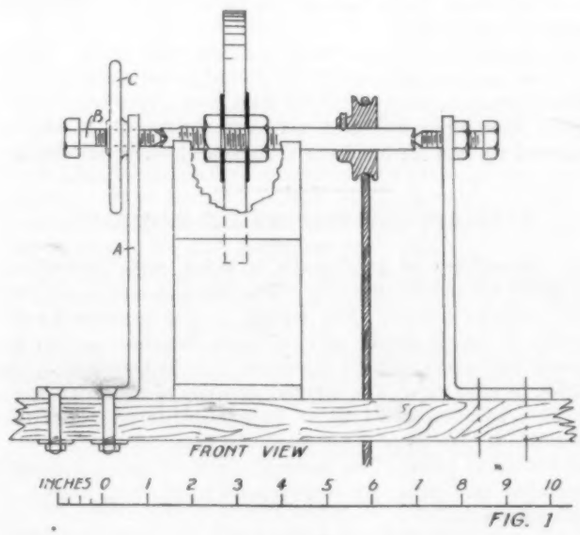


FIG. 1

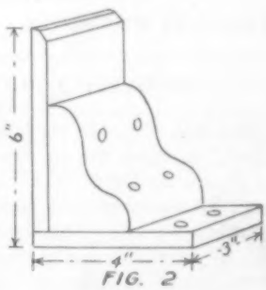


FIG. 2

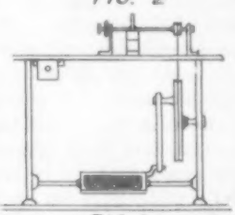


FIG. 3

Attention must be now paid to the spindle, and for this get an iron or soft steel shaft, ½ in. diameter and 6 ins. long. In each end, exactly in the center, drill a ⅛ in. hole ½ in. deep. Now counter-sink these holes enough to conform with the points of cone-pointed bolts. On one end cut a thread about 2½ ins. long to fit two hexagon nuts. File or turn three or four of the threads off one end of the shaft, which operation will make it handier to get emery wheels on and off, and looks neater. The nuts must have their flat faces perfectly at right angles with shaft when screwed on, or emery wheel will wobble Screw one of these nuts on shaft as far as it will go quite tight with its flat face, as shown, facing its emery wheel. Before putting on emery wheel, however, the pulley ought to be fastened on. This pulley, or grooved wheel, is made of cast iron, or hardwood, and fastened on with a small stud bolt with a pointed end. After having the pulley fastened on, put one of the 1½ ins. by ⅛ in. washers next the first nut, the emery wheel comes next, then the other washer and nut, and screw up tight—not too tight, or the emery wheel may be crushed. When choosing the emery wheel, be sure and don't get one that is very coarse; an emery wheel of the size suitable for small work is about 6 ins. diameter and ⅜ in. or ½ in. thick, with a leaded center for arbor. The hole must be same size as shaft. It will be noted that emery wheels do not always have a lead center. The size described can be bought for 50 cents. The emery wheel, with arbor, can now be fitted in between the centers, with pulley nearest to standard A; screw up bolt until it enters the conical arbor, enough to let it run free without binding, and lock it with the wheel C. The belt may be a 3-16th in. or ¼ in. round leather strap, or a stout cord. Care will have to be taken to see that everything is in line, and the pulley must be placed directly over the flywheel; also holes must be made, or, if they are already there, arranged to clear the belt. The rest must be next made out of ½ in. board (Fig. 2), cutting one piece 5½ ins. by 3 ins. (K), and one piece 4 ins. by 3 ins., and fitting a wooden brace in the angle to make it stiff; screw these three pieces together, and screw the rest thus made in front of emery wheel as Fig. 1. The finished machine should look like Fig. 3 when completed.

MUSIC OF FEMALE MOSQUITOES.

Sir Hiram S. Maxim has discovered that female mosquitoes have a voice which is particularly attractive to the males. With a dynamo machine under an electric light he accidentally produced a sound which was so good an imitation of the music made by female mosquitoes that the males mistook it for a female mosquito concert and many perished in their efforts to get nearer to the source of the music.

The Electrical Review says: "One evening while examining the lamp he found that everything in the immediate vicinity was covered with male mosquitoes. Although there were 200 times as many female mosquitoes on the ground as males, not a single female mosquito was found to have been attracted in the least by the sound. As the pitch of the note produced by the dynamo was almost identical with buzzing of the female mosquito, the male took the music to be the buzzing of the female."

The open-air treatment of consumption at Berlin resulted in 87 per cent of cures. Sixty establishments with 5,000 beds are being erected now in Germany.

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POPULAR MECHANICS

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BURIAL ALIVE TO PLACATE THE EVIL DEITY.

Dr. Paul Carus in his interesting work, "The History of the Devil," describes the practice of human sacrifices by burial alive to placate the Devil. Nor was this confined to one continent or time, but seems to have been of quite general observance. Frequently it was regarded as necessary to entomb within the foundation of a building living creatures and even men, an act which was regarded as a sacrifice to the soil which had to endure the weight of the structure. By this cruel custom people hoped to attain permanence and stability for great buildings. There can be no doubt that many of these stories are historical and that the practice continued until a comparatively recent time.

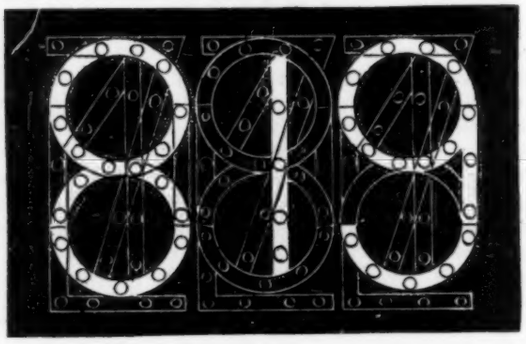
We read in Thiele that the walls of Copenhagen always sank down again and again, although they were constantly rebuilt, until the people took an innocent little girl, placed her on a chair before a table, gave her toys and sweets, and while she merrily played, twelve masons covered the vault and finished the wall, which since that time remained stable. Scutari is said to have been built in a similar way. A ghost appeared while the fortress was in the process of building, and demanded that the wife of one of the three Kings, who should bring the food to the masons on the next day, should be entombed in the foundation. Being a young mother, she was permitted to nurse her baby, and a hole was left in the wall for that purpose, which was closed as soon as the child was weaned.

Incredible as it may seem, the superstition existed in Europe as late as the nineteenth century, although we have no evidence that it was actually put into execution. In 1813 when the ice broke the dam of the river Elbe and the engineers had great trouble in repairing it, an old man addressed the dyke inspector, saying: "You will never repair the dyke unless you bury in it an innocent little child." In 1843 when the new bridge in Halle was built the people talked of a child which should be buried in its foundations.

Nor were churches and cathedrals exempt from this horrible necessity, and in cases where the sanctity of the place demanded a specially devoted offering a priest would be entombed alive. It is stated that in the erection of the Strassburg Cathedral a double offering was required, and that two brothers lie buried beneath its massive foundations.

S. M. Nicholson, president of the File Company of Providence, R. I., has announced the intended consolidation of several file works with the Arcade works of Anderson, Ind.

ELECTRIC SIGN TO DISPLACE CARRIAGE CALLS.



An illuminated carriage call system has been installed at the Metropolitan Opera House, New York, and the man with the fog-horn voice and the megaphone has been dispensed with. The plan is proving a success and may be introduced in other leading theatres of the country.

The numbers are flashed from a conspicuous place. Calling one's carriage amounts merely to the silent manipulation of a series of levers arranged after the fashion of a typewriter board. Figures from 0 to 9 can be shown so that carriage calls may be numbered up into the hundreds and changed every two seconds.

FABULOUS EXPENDITURE FOR RAILWAYS.

An expenditure of $200,000,000 is being made for railway equipment for the coming year. The railroad companies have taken steps to increase their freight hauling facilities by the addition of 193,439 freight cars and 4,340 locomotives, says the Railway Age, and passenger equipment is to be increased by the addition of 2,879 cars. The carrying capacity of American roads will have been increased by at least 8,000,000 tons. Of this probably less than 25 per cent should be deducted to cover cars used for replacement. Two hundred thousand cars make 4,000 trains of 50 cars each, each train capable of handling 2,000 tons of paying freight.

MAKING BARRELS BY ELECTRICITY.

A German firm is making barrels out of steel sheets. A longitudinal seam is welded electrically by the Bernados process. The bent sheet is clamped with its two opposing edges some quarter or three-eighths of an inch apart; a small fragment of steel is placed over the opening by one man and welded by means of the electric arc, while another man stands by to hammer it as soon as it is ready. After welding on successive fragments in the manner named the whole joint is finally completed and the cask is finished by adding its heads and its bung bosses, which are also welded on electrically. Coppered carbons are used except in corners, where plain carbons are employed.

INVENTED A "FOG AND SMOKE DESTROYER."

Fog and smoke-smothered cities will soon be of the past if the invention of an engineer of Dusseldorf, Germany, is all that the inventor claims for it. The device is what the engineer terms a "fog and smoke destroyer," and consists of a mechanical apparatus capable of consuming the particles that produce clouded air. It is claimed that the device has been so far perfected as to rob fogs of all their blinding effects. The engineer has brought his discovery to the notice of the British embassy at Berlin with a view of giving a practical demonstration in a typical London fog.

Easy Electrical Experiments

FOR BOYS.

ELEMENTARY STUDIES IN ELECTRICITY.

L. P. DICKINSON.

Chapter III. Various Types of Cells.

If the student has experimented with the form of battery described in Chapter I, he has probably noticed a violent action going on in the neighborhood of the zinc rods. Bubbles of gas are constantly coming from the solution, whose odor is extremely irritating. This gas is hydrogen, and it is set free from the acid of which it forms a part, when the latter dissolves the zinc. If the zinc rod were perfectly pure, there would be no such action as has been described, if the solution used were of proper strength. We could remedy the trouble by using zinc rods which are pure, but they are very expensive, and we can secure the same result in another way.

Remove the zinc rods from the solution after they have been immersed for three or four minutes, rinse them in clear water, and touch the end of one of them to a drop of mercury. Some of the latter will adhere to the zinc. Take a piece of cloth, and rub the mercury over the lower half of the rod. It will spread easily and rapidly, if the zinc be perfectly clean, until the lower part of the rod is covered with a bright, shiny layer of mercury. This process is called amalgamating the zinc. If there are black spots where the mercury does not flow easily, immerse again in the acid, and repeat the process.

After all the zincs have been thus amalgamated, replace them in the cells. There should be hardly any escape of gas now.

When no current is being taken from a battery, we say that is on open circuit. In this condition with zinc rods well amalgamated, there should be hardly any action between the acid and the zinc. It is usually the case, however, that the zinc will slowly dissolve, even with the precaution just described. So the zinc and carbon rods should be removed from the solution when the battery is not in use.

The neatest way of accomplishing this result is to use the arrangement shown in Fig. 1. The tumblers containing the solution are held in a trough made of pine boards thoroughly boiled in hot paraffine. At the ends of this trough are two upright pieces about one foot high, which support a horizontal shaft provided with a crank, by means of which the rods may be raised from the solution. Fasten a light strip of pine along each side of the square pieces of board which hold the rods, so that the latter are rigidly fastened together at the proper distance apart to easily fit into the tumblers when they are in the trough.

Attach the frame work carrying the rods to the horizontal shaft above mentioned by cords, so that when the crank is turned the rods will be raised from the solution. A ratchet on the crank shaft, with a retaining pawl on the upright will enable us to leave the rods at any desired height.

The student must not think that the form of battery which has been described is the only kind that could be made. As a matter of fact almost any two metals placed in a liquid capable of dissolving one of the metals more than the other, would give us an electric current. To prove this statement and to investigate the relative values of the different metals for use in galvanic batteries, the following experiments are interesting:

Procure small strips or rods of copper, zinc, iron, carbon, lead, and tin. Prepare also solutions of salt, sulphuric acid (see directions in Chapter I), and sal-ammoniac.

Take any two of the above metals, and immerse them in the salt solution. Run wires from the strips to the galvanometer just constructed, and notice if the needle moves when you make the final connection. Repeat this with the same strips when immersed in the other solutions. Try also as many different combinations of metals as you have at your disposal. It will be noticed that the effect produced upon the needle is stronger in some cases than in others. The combination of zinc, carbon, and

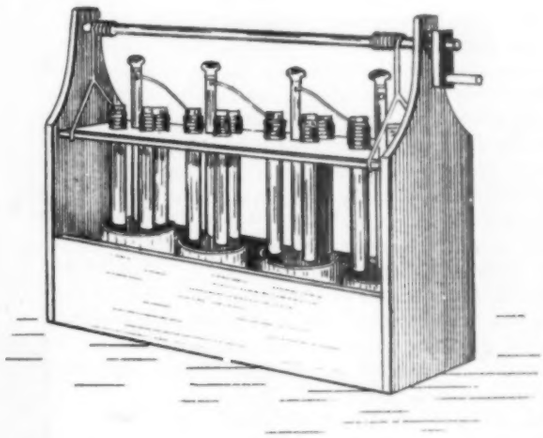


FIG. 1.

sulphuric acid will probably be found to produce the most marked effect. But for some purposes other combinations are used. For instance, if we wished to make a battery to ring an electric bell, we would use zinc and carbon rods, and a solution of sal-ammoniac.

Each different combination has received a special name, generally that of the man who invented it. A few of these are given in the following table. It will be noticed that many of the cells use two liquids. This is for the purpose of keeping the current constant, as it is found that the strength of the current falls off after a little, when only a single liquid is used. The abbreviation E. M. F. stands for electro motive force.

Name of Cell.	Materials Used.	Solutions Used.	E. M. F.
Daniell	Zinc Copper	Zinc Sul. Copper Sul.	1.08
Gravity	Zinc Copper	Zinc Sul. Copper Sul.	1.08
Leclanche	Zinc Carbon	Sal-Ammoniac	1.40
Grove	Zinc Platinum	Sul. Acid Nitric Acid	1.80
Bunsen	Zinc Carbon	Sul. Acid Nitric Acid	1.80
Poggendorf	Zinc Carbon	Chromic Acid	2.00
Fuller	Zinc Carbon	Salt Pot. Bi-Chromate	2.00
Edison-Lalande	Zinc Copper	Caustic potash	0.80

(To be continued.)

FIRST MONUMENT TO M'KINLEY IN CHINA.

The first monument to President McKinley will be erected by the Chinese. It will be located in Shanghai, and money is already being subscribed to the fund. The secret leaked out a few days ago when the Rev. Poon Chew, a Chinese minister of San Francisco, visited New York. He said:

"The Chinese feel that America is a friend to China, notwithstanding the exclusion laws. When President McKinley was shot it sent a thrill through all China, and they are going to show their grief in something more substantial than words of condolence."

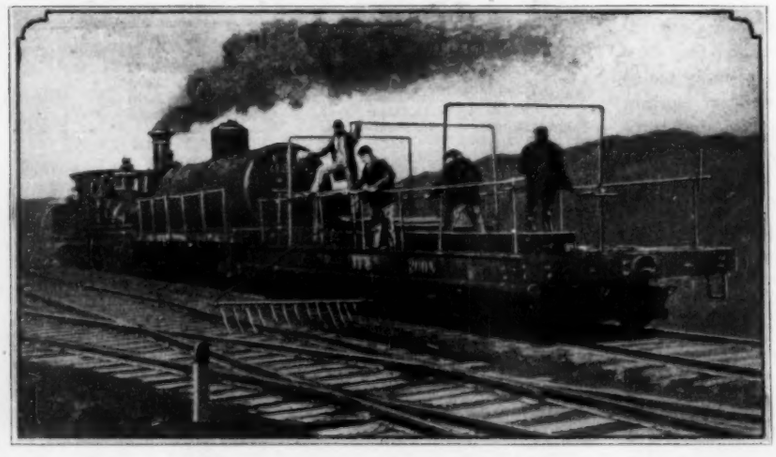
An American syndicate has been formed to supply Paris with gas. The syndicate is represented by A. Brady, a gas expert. It is preparing to finance a French company to the amount of 10,000,000 francs. The amount will be increased if necessary to 50,000,000 francs.

OIL SPRINKLING A GREAT SUCCESS.

One Thousand Miles of Roadbed Made Dustless by the Process—How it is Done.

More than 1,000 miles of roadbed in the United States are being sprinkled with oil. So successful has the system proven and so inexpensive has oil become because of the recent immense discoveries that it is considered a question of only a short time when every road in the United States will be adopting this method of sprinkling. The accompanying illustration, taken from the Roadmaster and Foreman, shows the sprinkling machinery, attached to an ordinary flat car, in operation.

The oil sprinkler car is simply for carrying and manipulating the machinery, says the Scientific American, the oil being stored in ordinary commercial tank cars. A four-inch pipe extends the length of the car with provisions at either end by means of rubber hose, for making connection with the oil supply. The main pipe is connected near the middle of the car with a branch pipe, which in turn carries the oil to three sections of two-inch pipe which constitute the sprinkling device. One of the two-inch pipes is suspended transversely below the car and extends the full length of the cross ties. Swinging from either side is one of the other sections of two-inch pipe. When in extended position they reach out on either side over the slight embankment upon which a railroad roabed is usually placed; whereas when the car is in a cut they reach up the slope on either side to a height of three or four feet. The oil escapes through slits, each about three inches in length by one inch wide, cut in the under sides of the three pipes comprising the sprinkling mechanism. The side arms of the sprinkler are each supported at the outer end by a chain controlled by a hand wheel so that they can be readily raised or lowered to conform with the character of the roadbed.



VIEW OF COMPLETE OIL SPRINKLING TRAIN.

A green house with the flower beds all on the ground instead of on benches has been erected at Edgely, Pa., by the Floral Exchange of Philadelphia, says The Florist's Review. This is a decided departure from the accepted methods of growing for cut flowers, but the promoters claim for it many advantages over the old system.

He kissed her and she screamed—
This cannot be denied;
Next time he did not kiss her—
Then of course she cried.
—Daily News.

An astronomer, earnest but rash,
Went out on a lot to view Mars,
Then a William goat came with a —
And then he saw all kinds of * * *

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AMERICA'S "STRUCTURAL UNDERTAKER."

An Institution That Takes Charge of the Remains of Cities and Palaces.

Its mission is to destroy. Men build cities of palaces, spend years and fortunes in proud triumphs of architectural and structural grandeur. Then comes this giant with its army of destroyers and soon all that remains is the phantom-like memory. It is a "structural undertaker," that deals in the corpses

WRECKING DEPOT. VAN BUREN STREET.

of human achievements. When their mission of life is over the remains are hauled away to a grave-yard which is strewn with the bones of the most magnificent efforts of the artificer. This grave-yard is conducted by the undertaking firm itself.

The Chicago World's Fair, which people called the "White City" and the "Dream City," the Pan-American Exposition, which from its fanciful coloring earned the name of "Rainbow City," and the bewildering beauties of the Trans-Mississippi Exposition, after their death, were taken in charge by this same "undertaker." Already it has its eye on the Louisiana Purchase Exposition, and its remains, too, will doubtless find a resting place with those of its sister cities of fancy in this "exposition cemetery."

Aside from the exposition cities, other buildings galore, many of them veritable palaces, have been hauled away to the cemetery. When the life of a structure is over and there is money enough in its remains to pay the funeral expenses, it is pretty sure to go the way of those that have gone before. The Armour Stock Yards plant, the Four Seasons Hotel of Harrogate, Tenn., and the Chicago Custom House and Postoffice have all been laid away in the same place. The funeral of the Van Buren street depot of Chicago is now in progress.

The home of the "Structural Undertaker" is in Chicago, and in Chicago is its cemetery. Commercially it is known as the Chicago House Wrecking company, which has its immense establishment at 35th and Iron streets. Here may be seen the wreckings of architectural feats once admired by all the world.

But these structural bones are not buried and allowed to return to dust as are human bones. They are rejuvenated and made like new and in a short time may serve in the building of some other structure. Thus it will be seen that this "destroyer" is also a benefactor, for it saves valuable material from going to ruin and being thrown away. While it wrecks it preserves. The buildings are torn down, but the materials are carefully kept and while generally as good as new, they are sold at greatly reduced prices, which helps many builders to save money.

The world's fair, which cost $33,000,000 to erect, was purchased by the house-wrecking company for $80,000 cash. Years of toil were required to build this wonderful white city, but it was wiped away by the house-wrecking company in a few months and the grounds made perfectly clean. The Chicago postoffice, built at a cost of $7,000,000, was bought for $15,519. The buildings of the Trans-Mississippi exposition cost $2,750,000, and were bought for $50,000. The Pan-American exposition was purchased for $132,000. In building the latter exposition there were used 33,000,000 feet of lumber; 125,000 square feet of windows; 40,000 square feet of doors; 2,000,000 pounds of iron pipe 200,000; pounds of structural iron; 200,000 incandescent lights; 600,000 square feet of roofing tile; millions of brick; 9,000 flag poles; 15,000 flags; 1,500 sculptural groups and countless other items, all of which went for $132,000.

Besides the endless amount of building materials, furnishings, and machinery, acquired in the purchase of buildings and factories, the company handles everything in the line of merchandise that can be bought at sacrifice sales. The proprietors call it the World's Bargain House. There can scarcely be mentioned anything that it doesn't handle. The company has a paid up capital stock of $300,000. The establishment covers more than 1,000,000 square feet of ground.

MODE OF TRAFFIC IN INDIA.

The Ancient Araba Being Supplanted by Modern Conveyances.

New methods of transportation are working great innovations in India. Besides the new railroads there is the substitution of the post cart for the naked runner and that of wheeled traffic for the pack-bullock.

The engraving shows an araba, which is a heavy springless

THE ARABA.

wagon covered with a screen as shelter from the rays of the sun. It is usually drawn by oxen or cows. It is used throughout northwestern and Central Asia, India, Turkey and Russia.

REMARKABLE FEAT OF FILLING IN BY THE "Q."

At Sugar Creek, near Ottumwa, Ia., the Chicago, Burlington & Quincy has under way the greatest feat of prairie land "filling" known to Western railroads. The entire valley between the crest of two hills, 2,600 feet apart, is being filled up. The work will require 328,000 cubic yards of grading. It was begun June 1 and will not be completed for another year. At the top of one of the hills three steam shovels dump clay in the cars, which a dummy engine pushes out upon the high, portable iron bridge, where they deposit their loads into the valley. With one end supported upon the hill and the other on the trestle work the bridge is moved along as the work advances. When the grading is completed it will be 275 feet wide at the base. To provide for the spring flood waters, which rush along Sugar Creek, two 35-foot arches have been constructed. In their construction 150 men were employed. The arch work contains 660,000 bricks besides the stone.

A RECIPE FOR ACID PICKLE FOR BRASS CASTINGS.

If greasy, the castings should be cleaned by boiling in lye or potash. The first pickle is composed of nitric acid, one quart; water, six to eight quarts. After pickling in this mixture the castings should be washed in clear warm or hot water, and the following pickle be then used: Sulphuric acid, one quart; nitric acid, two quarts; muriatic acid, a few drops. The first pickle will remove the discolorations due to iron, if present. The muriatic acid of the second pickle will darken the color of the castings to an extent depending on the amount used.—American Machinist.

EXPLAINS "LODGE LANGUAGE."

"Where were you last night?" Mrs. Hulda Hellson asked of her husband Knute, in a before breakfast tone of voice.

Knute, who arrived home at 2 o'clock a. m.—"Ve haf a special meetin' of te lodge, Huldah, and I var dar, you bet yur boots."

"What did you do at the lodge?"

"Yust eferyting for te gute of te order."

"Last night you were talking in your sleep and you said something about '25 cent limit.' What did you mean?"

"O dat vas a nodder faller's fault. He vas talkin' about raisin' te assessment and das made me hot."

"And you said you 'was in.' What did that mean?"

"Wail, et maint det I var member an haf youst so much to say as anybody."

"When you said, 'I'll open it,' what did you mean?"

"Some feller could not get onto do door, I taink. You see, mae dear vife, et is lock all tem."

"Once or twice I heard you say "It's a slow-down.' What did you mean?"

"Hulda, Aye haf no right to tal yo tengs outside of te lodge, but Aye will tal ye dis. Das means in lodge language, 'God bless mae home.'"—Clinton Age.

An old colored woman threw all the odds and ends of medicine left after her husband's death into the fire. There was a sudden explosion which upset everything in the house, threw the stove out of the window and smashed the roof. The old woman, when she had sufficiently recovered, exclaimed: "Mos' pow'ful movin' medcin I evad sawd. No wondah' de ole man died."—National Laundry Journal.

Reuben—"Say, Steuben, I bet yeou my barlow against your pipe that I know a place where they raise and ship grain all in one day."

Steuben—"I go yeou. Now where is it?"

Reuben—"The grain elevator."

TO CONTROL THE WORLD'S TOOL TRADE.

A combination of pneumatic tool companies which is to control the tool output of the world has been effected. The new organization is organized under the laws of New Jersey and is known as the Chicago Pneumatic Tool company. It includes the Chicago Pneumatic Tool company, Boyer Machine company of Detroit, Chisholm & Moore Manufacturing company of Cleveland, New York Air Compresser company of New York and the New Taite-Howard Pneumatic Tool company of London.

CHICAGO - TEXAS OIL SYNDICATE

Capital Stock, $1,000,000.00 in shares of 50 cents each
Full paid and non-assessable

OFFICERS AND DIRECTORS—President, W. C. Moore, President of the Moore-Cortes Canal Co., Houston, Texas; Hon. Wm. E. Mason, United States Senator from Illinois; Perry A. Hull, Master in Chancery of the Circuit Court, Chicago; Treasurer, O. C. Drew, Cashier Planters' & Mechanics' National Bank, Houston, Texas; S. R. Perryman, Attorney, Houston, Texas.

REFERENCES—Chicago National Bank Chicago, Ill.; Planters' and Mechanics National Bank, Houston, Texas; The First National Bank of Beaumont, Texas

WHAT THIS SYNDICATE OFFERS

It owns 437 acres of the choicest oil lands in Texas. Its first well on Spindle Top Heights, Beaumont, is now nearly completed. There are one hundred and ten gushers within a stone's throw of it—on every side. This well would have been completed before this except for the fact that for four weeks the drill was in the hardest rock yet struck on Spindle Top, and it took three weeks' drilling, night and day, to get through this forty-foot stratum. This was finally penetrated and the drill is now sinking rapidly. A gusher may be expected daily. This hard rock is an excellent indication of a big deposit of oil beneath it.

In addition to the Spindle Top Heights property, the Syndicate owns 400 acres at Sour Lake (within a few hundred feet of where a gusher has been struck), at Dayton Prairie, at Saratoga and elsewhere. Gushers are now in at Saratoga and Sour Lake and flowing perfect lubricating oil, making the proven oil fields of immense value. These lands are all paid for and owned outright by the Syndicate, therefore there are no leases and no royalties to pay.

A GUSHER GUARANTEED WITHIN THIRTY DAYS

This Syndicate guarantees a gusher on Spindle Top Heights within 30 days. A limited amount of treasury stock is offered for sale at 50 cents per share in lots of 50 shares and upwards. Money now subscribed for stock will be refunded directly to the subscriber if the Syndicate has not a gusher within 30 days. Out of town subscribers may deposit subscriptions in their local banks and notify this company at the address below.

MARKETING ARRANGEMENTS MADE

The demand for Texas oil is world wide and enormous. The only problem is to get the oil to the market. This problem has been solved by the Syndicate.

This Syndicate has just bought 20 acres of tankage ground, with 1,000 feet frontage on the railroad (The Texas and New Orleans Branch of the Southern Pacific), only 1½ miles from Spindle Top. This will give trackage for 30 tank cars that can be loaded at one time. Tanks and a pipeline from the Syndicate's wells to its tanks and loading racks will be built at once. This will give the Syndicate unexcelled facilities for marketing the products of its wells.

With these arrangements made, as soon as a gusher comes in, the property will be greatly enhanced in value, and

The price of the stock Will at Once Advance and will thereafter continue to go up rapidly ON MERIT ALONE

It is now offered at par—50 cents per share—the ground floor price. Dividends will be paid as soon as earnings begin. That time is not far off—BUY NOW. The company is managed by men of recognized ability and known integrity.

No preferred stock—all shareholders on absolutely the same basis. When you buy and pay for this stock you can never be to any more expense. It can never be assessed.

Send requests for extended prospectus, remittances for subscription or any information to

$25	buys	50	shares
$50	"	100	"
$100	"	200	"
$200	"	500	"

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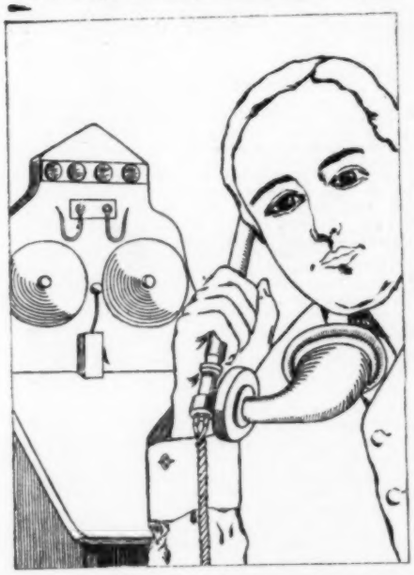
all ordinary burns from fire, hot iron or hot water, and will absolutely prevent blister. Takes out all the burn in from one to five minutes. Will not cure everything, but is excellent for reducing inflammation and healing many chronic sores, chapped hands or lips, etc. Is made of the purest vegetable products only, and is perfectly harmless. Excellent for tightness of the throat or chest. Although in use for many years, is now put on the market for the first time. Once used, always wanted. Sent postpaid anywhere, 25 cents. If not as represented money cheerfully returned. Address

COLDBURN, Room 604
162 Washington Street, - Chicago

ENGLISH TELEPHONE.

The telephone in general use in England



is like that shown in the above picture. The British think their way of having the ear and mouthpiece so they can be held in one hand is much more sensible than the American custom.

THE GOAL.

James Smith was a man
On the steam-engine plan,
He worked forty miles to the hour;
His head, like a hive,
With plans was alive
Of railroads, and money, and power.

One stroke of his pen
Enriched many men,
Or else plunged them all in despair;
The market stood still
To determine his will,
While he waxed many times millionaire.

Yet often he sighed,
As his wealth multiplied,
For leisure, and travel, and ease
And he planned for the day
When, retired, he could say,
"At last I can do as I please."

Now at length came the time,
When he'd long passed his prime,
For which he had struggled and sighed;
The world was his own,
And he sat on the throne—
But it happened just then that he died.

The government of New Zealand has decided to order all steel bridges from the United States in future. The decision comes as a result of the recent experience of the Manawatu Railroad company, when the bid of an American firm on a big steel viaduct was one-fourth the price bid by the English firms.

ROUGH ON THE ENGINEERS.

Jim Kennedy is a passenger engineer on the 'Frisco, and Dennis Malone is a section foreman on the same line. The men live neighbors in Shelby and are good friends.

Not long ago Malone approached Kennedy in all seriousness and said: "Jim, ye know me b'y, Tim, don't ye?"

"Yes, sure!" relied Kennedy, quickly taking in mind the freckled, red-headed and overgrown boy in question. "Sure I know Tim. What's he doin'? Anything?"

"No. That's what I want to talk to ye about. Ye see, Jim," said Malone, jamming both fists deep into his trousers pockets and squaring his broad shoulders. "Tim's a bit over sixteen now, an' I want the b'y to git to wurruk an' git started well. He's big enough an' old enough to go to wurruk. Don't ye t'ink so, Jim?"

"Sure! He is—big—enough—and—old—enough," replied Kennedy, slowly and deliberately, the doubt meanwhile growing in his mind whether Tim had brains enough to pound sand or to even come in out of the wet. "He looks big enough and husky enough to eat hay."

"Yis, th' b'y's sthrong as anny bull. But this is what I want ye to do, Jim. Take Tim on yer injun over to the shops at Gumbo. Git' im a job wipin' foorst, then git 'im on to fire for ye later, and let the kid wurruk up to a job running' like yerself has got. Will ye do it, Jim?"

Kennedy hesitated before accepting sponsorship of a doubtful bumpkin like Tim. Finally a bright thought struck him. "Say, Denny, why don't you give Tim a job in your gang on the section; let him tamp ties awhile, and work his way up to foreman of a gang later on—maybe up to road master."

"I'll tell ye why I don't, Jim," said Malone, seriously and confidingly. "To be candid wid ye, Jim. th' b'y's not overly bright."—Locomotive Engineering.

TROLLEY LINES IN THE HOLY LAND.

Trolley cars are to displace the patient ass as a means of locomotion in the Holy Land. Cleveland and Chicago capitalists have secured concession for electric lines from Cairo, Egypt, to Mount Sinai and thence along the coast of the Red Sea through Syria and Arabia to Mecca, with a branch running to Damascus. Already trolley cars are running from Jerusalem to Galilee, and the progress of the Zionistic movement with Jerusalem as a center, promises a net work of trolley lines centering there.

A colored man whose insured household personel was burned, being asked how he got along with the settlement, said: "I jes tole de 'Juster dat I didn't knowed nothin' 'bout 'surance and trowed myself plum on his ignerence."

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FOR SALE—Job lot new electrical goods given us to sell; list for stamp. We handle everything electrical and at lowest prices. Stamp for catalogue. Dept. N., T. Binford Electric Works, 904 Washington Blvd., Chicago, Ill.

HELP WANTED.

WANTED—Pattern makers, molders and machinists, first-class, to work in new shops with new tools. Apply to Quincy Engine Works, Quincy, Ill.

WANTED—Boiler makers. Standard Oil Co., Whiting, Ind.

WANTED—Competent solicitors, new proposition; agents are making $5 a day. Address R. 604, 100 Washington St., Chicago, Ill.

WANTED—Good house and sign painter and paper hanger; must be sober and steady; state salary. Address Anton Popelar, Dodge, Neb.

WANTED—A tinner, must be a mechanic; wages $2.50 per day; steady work. Address Fowler & Wolfe, 216 Court St., Paducah, Ky.

WANTED—Stove salesman; state age, experience and salary wanted. Danville Stove & Mfg. Co., Pittsburg, Pa.

WANTED—Pattern makers, eight first-class; steady employment. Apply Peru Steel Casting Co., Peru, Ind.

WANTED—Lady agents, intelligent, persistent; city or country; to sell article of apparel; samples free. 194 E. Van Buren St., Chicago, Ill.

WANTED—Plate punchers. Chicago Ship Building Co., 101st St. and Calumet River, South Chicago, Ill.

WANTED—An all-around man for our shop; one thoroughly capable of making cornices, sky-lights and setting of furnaces; must also be a practical gravel roofer, and capable of making any patterns necessary for all kinds of work coming into a tin shop. Barnes & Vuss Co., Grand Forks, N. D.

WANTED—Carriage body maker on all kinds of work. Address O'Brien & O'Connell, 319 and 321 Cherry St., Terre Haute, Ind.

WANTED AGENTS—Big money for agents selling new gas light burner for all kerosene lamps. 200 per cent profit; quick sales; no risk; sample sent free; write at once. Luther Mfg. Co., D. 36, Cincinnati, Ohio.

WANTED AGENTS—Ne Plus Ultra charcoal flat iron, entirely new; different from all others; irons without cooling. Geo. Finn, Newark, N. J.

WANTED—Ruler, first-class; steady work to the right party; union scale. Address at once Saml. F. Myerson Printing Co., Third and Vine Sts., St. Louis, Mo.

WANTED—Lithographic transferer, good, for commercial work. Address, stating age, length of experience and wages required, Calvert Lithographing Co., Detroit, Mich.

WANTED—Clerk, one experienced in clerking in dye house; must be thoroughly competent. Address Hornung, 242 Nicollet Ave., Minneapolis, Minn.

WANTED—At once a good, live young man; one who can work in tin shop, and good salesman in store, one who is not afraid to work. Address Lock Box 1516, Anita, Iowa.

WANTED—Salesman, who is visiting the Pacific coast trade in the hardware and kindred lines, for the sale of incandescent mantles on a commission basis. Address W. S., P. O. Box 1592, Philadelphia, Pa.

WANTED—Men, for janitors' assistant for new school and hospital; free fare; very good position. Address Capable 200, care A. O. Steffens, P. O. Box 968, New York.

WANTED—We are in need of a good, sober, all-around tinner and plumber at once; good wages and steady work the year around. 3 Manley Bros., Harvard, Ill.

WANTED HELP—$9 to $15 weekly working for us at home; no canvassing; if now employed an hour or two evenings will add $5 to $6 in your weekly income; work mailed on application. Address 20th Century Mfg. Co., Toledo, O.

BUSINESS CHANCES.

FOR SALE—A mantel, tile and manufacturing business, established fifteen years, having a large and prosperous trade; the business is free from incumbrance; sickness the only reason for selling; a first-class opportunity to get a paying business; favorable terms can be made. Address Denver Mantel and Tile Co., 1652 Tremont St., Denver, Colo.

A COMPANY just completing its organization for manufacturing one of the most staple articles on the market solicits subscription to a portion of its unplaced stock; an investigation will prove this the most inviting proposition ever presented, showing large dividends upon the investment, with absolute certainty of security. Call or write. Suite 218 Reaper Block, Chicago.

PARTNER with $1,000 to develop established paying engraving business; experienced solicitor preferred. Address The Printing Plate Co., Cincinnati, O.

WANTED—To buy a good paying hardware business, from $2,000 to $3,500. In town of from 500 or more inhabitants, with good territory. Give amount of business, size of stock and class of people, size of store and rent. Enclose stamped envelope for reply. Address B. A. H., Rockwell City, Iowa.

WANT ACTIVE PARTNER—South Side 18-can milk business. Inquire Smith, 2314 Wabash Ave., Chicago.

FOR SALE—Tin shop in good town of 1,000 inhabitants in northern Indiana; only shop in town. Will sell cheap for cash if taken at once. Address S. L. Prickett, Milford, Ind.

FOR SALE—My stock of hardware and implements; will invoice about 4,000; it is all new and in good condition. Good reason for selling. Address E. W. Putnam, Henning, Ill.

WANTED—A young, active, capable business man to keep books and take active part in a live manufacturing business (wood). Willing to invest at least five thousand dollars. P. O. Box 598, Charleston, S. C.

FOR SALE—One double saw mill complete with 60 and 30 saws. Address G. W. Startle, Osborn, O.

FOR SALE—Second-hand steam, gasoline, electric vehicles. Guaranteed. A. L. Dyke, Linmar Bldg., St. Louis, Mo.

POSITIONS WANTED.

WANTED—Hustling young man, 10 years' experience, desires good position where hard work with proper results means money; gilt-edged references. Address Eulow, General Delivery, Keokuk, Iowa.

WANTED—Position as agent; can sell anything. Albert Durr, Palestine, Texas.

WANTED—By first-class laundress; can do fine lace curtains; or cleaning by the day; references. 3759 Vincennes Ave., Chicago, Ill.

POSITION WANTED—By young man 23 years of age to finish learning tinner's trade; sober and steady habits, and willing to do anything around store and shop. Address Lock Box 368, Estherville, Iowa.

WANTED—Position as salesman for manufacturing establishment. Bert McKinnon, General Delivery, Kansas City, Kan.

WANTED—By man of 12 years' experience in the hardware and stove line; position with either wholesale or retail house; A1 builders' hardware and stove salesman; can furnish best of references. Address A. R., Station D., Detroit, Mich.

WANTED—Engineer, competent on steam and electric plants, wants situation. Hunter, 108 Morris Ave., Newark, N. J.

WANTED—Situation; general all-around machinist; no objection to leaving city. Address J. M. Graham Seabrooke, Dayton, Ohio.

WANTED—A position as tinner at once; have had 4 years' experience at in and outside work; can do furnace and bicycle work; can give good references. Address P. O. Box 131, Lakefield, Minn.

SITUATION WANTED—As an apprentice in a jewelry store to learn trade, by a young man of good moral habits and mechanical turn. Address E. O. Carver, Henry, Ill.

WANTED—Position in hardware store; 5 years' experience; 2 years in the shop. Preference small town; any part of country. Address J. O. Harney, Lawton, O. T.

WANTED—Position as solicitor for some new up-to-date and useful invention. S. H. King, 6730 South Halsted St., Chicago.

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